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Paper March 1828

an excellent Essay - a discussion of
 the various opinions - both in
 regard to the propriety of the
 employment of the
 on

Opium.

by

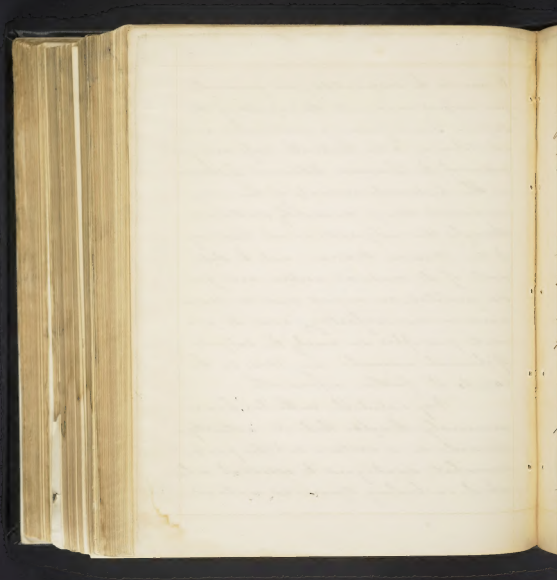
Edward Staples.

Ms. A. 1. 1. 1.

Opium is the inspissated juice procured from incisions, made into the capsules of the *Papaver Somniferum*, a well known annual, belonging to the thirtieth class and first order, of the Linnean Botanical System.

The historical accounts of this very celebrated drug, are widely scattered through the early and recent history of the *Materia Medica*; and the statements of its medical virtues, and poison qualities, are various, and in some measures unsatisfactory; even its proximate principles so amply the subject of chemical research may still be the subjects of further experiments.

Very respectable authorities have erroneously thought, that its activity resided in a certain subtle part, somewhat analogous to essential oils, which on boiling Opium in water



they relate arises and may be con-
sidered, which in doses of a few
grains, has so much activity as to
produce death in dogs unaffected by
the common Opium in drachm doses.

Newman has asserted that he knew
a preparation of Opium, capable of pro-
ducing stupefaction, without its internal
use, he fancied its action resembled the
fumes of charcoal and like carbonic
acid gas its baneful influence could
be extended to a whole roomfull of
persons.

Our supplies of
Opium are obtained from India and ^{which} Turkey
the latter is deservedly most
esteemed. Turkey Opium has a
peculiar, strong, heavy, narcotic
odour, and a bitter taste which is
accompanied with a sense of acrid
heat, or biting on the tongue and lips



if the opium be well chewed; and if it be long left in the mouth of a person unaccustomed to chew it, *stomatitis* is produced." (The peculiar odour, narcotic smell, and the adhesive qualities of opium, are peculiarly affected by subjecting it to distillation, in the process devised for making *de narcotised opium*; the two first are nearly removed, and the latter essentially modified; and the powder when thrown upon a red hot coal gives off fumes more resembling animal substances burning; and has the smell of tobacco stems under similar circumstances)

"The colour of Turkey opium when good is of a reddish brown or fawn colour, its texture compact and uniform. Its specific gravity 1.336 which

The first of these is the
fact that the world is
not a uniform whole
but a collection of
many different parts
each of which has its
own special character
and its own special
history. The second
fact is that the world
is not a static whole
but a dynamic whole
which is constantly
changing and
developing. The third
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when compared with the condensed juices of other plants, is heavy being only excelled in this respect by Guaiacum and Opoponax. When dry its fracture is uniform, yielding a powder of a yellowish brown, which the temperature of the hand is sufficient to render adhesive. It is inflammable, and the powder when thrown upon ~~a~~ red hot coal gives slightly the smell of burning tobacco stems. Its best solvent is diluted alcohol combined with acetic acid, Alcohol of 40 ^{about 25°} Beaumé dissolves but small portions even at a boiling heat, and Aether of 60 of the same scale, dissolves a much smaller portion than pure Alcohol. Water distilled from Opium in powder, has faintly the smell of the drug.

My dear Sir,
I have the honor to acknowledge the receipt of your letter of the 14th inst. in relation to the subject of the proposed amendment to the Constitution of the State, and in reply to inform you that the same has been forwarded to the proper authorities for their consideration. I am, Sir, very respectfully,
Your obedient servant,
J. M. Smith

Alcohol of 40 distilled under
the same circumstances, as under
good and without odor, and
however, Ammonia is combined with
the water, or alone, the odors is
peculiar, and perceptible in both,
the water, and continuous distilla-
tions.

In 1803 M. Berzeli-
us described a salt obtained from
Opium, which has since been de-
posed to be the Meconate of Morphine,
more recent asserted by M. Robiquet
to be a carbonate. M. Seguin in
1804, discovered a crystalline body
in Opium, and described most
of its properties without having seen
any of its alkaline qualities.

M. Lantourneau first announced
in 1807 Morphine as an alkali-
ne substance, his investigations



others, it by ammonia, even several times dissolved in diluted sulphuric acid, and as often reprecipitated by ammonia, in order to remove the colouring matter, which was not finally attracted, without the aid of Alcohol, and the Salt at last described as a coloured substance.

From the researches of these gentlemen, and those of M. Robiquet it is asserted that Opium is composed of 1st, a fixed oil; 2nd of matter analogous to castor oil; 3rd, of a vegetable animal substance; 4th, of mucilage; 5th, of feculent matter; 6th, of resin; 7th, of the remains of vegetable fibre; 8th, of narcotine, 9th, of meconic acid; 10th, of an acid discovered by M. Robiquet; and 11th, of Morphia.



The several ingredients composing Opium are supposed to be united with the exception of Narcotine and Morphine. The mucous acid is only interesting in consequence of its connection with Morphine existing in opium as the solvent of that substance.

Narcotine may readily be obtained from Opium, by the repeated use of Ether, which dissolves besides that substance a portion of the matter analogous to Catechu, by removing the Ether by distillation, acting upon the mass left in the retort with strong alcohol, suffering crystals to form, washing them with oil of turpentine, and redissolving them in strong alcohol, pure narcotine may be obtained in crystals, of nearly a snow white—



The quantity of caoutchouc, in opium, is inconsiderable, when compared with many vegetable substances. Seven hundred and sixty one grains were subjected to eight times the bulk of Oil of turpentine, for several days, at a temperature above six cents, only sixty four grains were dissolved. The Marsestine, when produced from the same Opium was destitute of the substance resembling caoutchouc always produced when ether is the first solvent. Of the most important substance obtained from Opium Morphia. Having tried with unsatisfactory results the processes detailed by Magendie and others I have endeavored to form a formula founded upon experiments made upon a small scale



in which I succeeded in procuring
the article in a crystalline form
by the first precipitation - The re-
sults of these experiments induced
me to combine Acetic acid of great
strength, the having used common vinegar
at first, with the same result - I then
added more and more, so that I mixed
it up to about the weight of the com-
monly purchased goods, as well as my-
self. The result was that
it still will be found that the
acetic acid is improved in quality
when it is well balanced - so
that it will be found to be
is almost the same as the
one which is used in the
my point in the following.

It was found that the
acetic acid was in the
the action



of three ounces of strong acetic, and
and an equal quantity of pure water,
in twenty-four hours to a temperature
over 50° Fahrenheit after which eight
ounces of Alcohol of 35° Beaume (the
specific gravity, about 885°) are to be ad-
ded, and a further digestion sufficed
of six or eight hours, in a semi-air-
temperature, the heat of the solution
then to be gradually raised by means
of a water bath to 160° Fahrenheit, and
after having remained at that heat
for a short time to be thrown upon
a funnel & strainer, here the opera-
tion continued by repeating the process
facilitating filtration by heat as well
as in other stages of this process may
be used with great advantage) the
undissolved portion of Cinchon, is then
to be subjected to a similar portion



of acetic acid and water as before,
adding Alcohol, suffering digestion,
and raising the temperature, as be-
fore, and the second solution having
been thrown upon the Glauconite Strain
or, should be well pressed while not
yet the drags of the Opium. The
two highly colored acidulous tinctures,
may be mixed and all the transpa-
rent portion be decanted, subjected to
filtration, only the small portion which
always remains after straining. All
the transparent liquor by the two ex-
hausts should now be placed in a
suitable glass, where the precipitation
which is to be effected by Ammonia
in Alcohol, added with so much ca-
ution that no apparent disturbance
takes place, this may best be done
through the medium of a glass tube



extending to the bottom of the vessel,
the specific gravity of the ammonia
and Alcohol ensuring its more uni-
form diffusion throughout the men-
struum; when introduced at the
bottom, the proper strength of the
precipitant is also more readily
ascertained, if turbidness is ap-
parent at the end of the tube the
alkali is not sufficiently diluted

The ammonia is to be added from
time to time until the acetic acid
is saturated, this to be determined
by the appropriate test or even the
smell relied upon as a sufficiently
accurate indication; after satura-
tion, the solution should be placed
in a cool situation, exposed to the
light, the crystals will soon begin
to form, and in the course of a



few days, nearly all the Morphia will have succeeded from the solution, especially if the weather is favourable.

The crystals which consist principally of Morphia, should be collected and washed, in a small portion of warm water, or cold diluted alcohol, in either case, returning the slightly coloured washing, to the solution from which the Crystals were obtained, after which they may be set aside to await the result of evaporating the ~~extract~~, or may be immediately subjected to the action of boiling alcohol of 35 from which when cold the Morphia will subside in crystals of silky white. The solution containing the colouring matter and other substances found in opium, now deprived of nearly all its



Morphia, may be submitted to distillation in a water bath, permitting the liquid to cool when reduced one third, in order that more crystals may form should Morphia still remain in solution, and it may be well to suffer the liquid to cool at another point of distillation, for the same purpose. It will however, be found that nearly all the morphia recedes from the first solution in the first precipitation.

The residue of the solution, may be evaporated in a water bath, and the extract of Opium deprived of all morphia be formed. The yellowing appears to be the rationale of the process. Opium is presented in solution, in its best solvent diluted alcohol the power of which,



is much evolted by heat and acetic acid, from which pure aqua ammoniac, neutral, produces the precipitate in several of the ingredients of opium in a very imperfect manner combined with alcohol the most soluble portions are still retained in the solution by its acid while the uncombined Morphia, but little soluble in pure alcohol and left so when clearing matter is present, secedes gradually from the solution

Experimental illustration. Four ounces of coarsely powdered opium was twice acted upon by the heated menstruum in the manner detailed on the first trial 868 grains were dissolved, on the second 350 grains from each separately Morphia was obtained, the result 80 grains of pure



Morphia and 10 grains of opium,
An extract was then formed, con-
taining all the ingredients of Opium,
except Morphia, of the consistence
and colour of pitch. A young
gentleman repeated the experiment,
and obtained from a similar por-
tion of Opium, one drachm and
fifty nine grains, he submitted
the Opium to longer digestion, and
was aided by cool weather while
my experiment was made in the
warmest season.

I think there is reason to believe, that
the process can be further modified
by using the powerful agents heat
and acid, and the cautious addi-
tions of Alkali, that by merely redu-
cing the solvent power of the menstru-
um, without even saturating the



acid, the Morphia will recede,
acetic acid seeming to dissolve
the colouring matter, in preference
to saturating Morphia. From a
very strong acetic tincture crystals
have formed after cooling. The
formula however as detailed, is
uniform in its productions, and easily
to be reduced to practice; it
seems to me particularly suitable
to Physicians situated at a distance
from large Cities, who occasionally
may meet with persons, who from
idiosyncrasy cannot with advantage
take any of the usual prepara-
tions of Opium; following its details
the morphia may be introduced in
a very short time, even from a
drachm of Opium, the mistress
of chemistry in the University.



has produced the morphia from
the common acetate of opium, from
the acetic anhydride made with the
mineral venous acid & the Pharma-
cians, and which is very com-
mon to mix with, certainly in-
solubility, although it is with a med-
ium, as is the case, as when all
the directions of the formula are
observed. The utility of the
formula, as a test of the quality of
Opium, will render it, simple de-
tails interesting to the Pharmaceu-
tist. Its application to the examina-
tion of this article, to see Opium
should that, critical articles, again
either simple, or in combination,
go before the public, is rendered
by appropriate. With regard
to its chemical characters, the mor-



we objected, that the process of
using alcohol as solvent, in the
first place, will include the gen-
eral addition; this I think will
be found incorrect when it is
considered that every solvent known
renders alcohol necessary to re-
move the coloring matter from
the precipitate, and this is accom-
plished with so much difficulty
that Professor Thompson recom-
mends the use of charcoal for
the purpose, the morphia will
inevitably be entangled in this
substance and require boiling
alcohol again and again to
remove it. In all the various
washings, and solutions in al-
cohol, which succeed the pre-
cipitation, by the usual



methods, are considered the var-
ious will scarcely suspend
into a quiescent use in the first
instance.

The quantity of
ammonia, will be less than is
usually required, and the portion
beyond saturation will be re-
claimed in the alcohol distilled
from the extract.

In the
solution of the Riquette, it is
recommended to add an aque-
ous extract, after the magnesi-
an precipitate, asserting that some
of the Morphia is still retained
in solution, if the liquor is def-
used through sublimated water to
hold all the Morphia in solution
this must be a tedious and expen-
sive process, and attended with some
degree of impairing the supposed ser-



tives of the extract. The extract
which is the signal of the process here
is denuded, will be far more con-
densed and being in an alcohol
is most pure, will require the ex-
penditure of much less heat than
will be required, to drive off
a similar quantity of water!!

The Acetic acid seems prefer-
able on account of its acknowledged
solvent power of vegetable substances,
it will form in the extract, in com-
bination with ammonia, the Spiritus
Mendacius, a mild and salutary
substance.

Descarting on the
use of Opium a distinguished pro-
fessor observes "of all the articles of
the Materia medica, this is the
most extensively useful, there being



search one morbid affection, or an
ordid condition, in which, under
certain circumstances, it is not exhi-
ited either alone, or in combination.
"Concerning the operation of Opium,
medical sentiment continues to be di-
vided, though the preponderance is
decidedly in favour of its stimulant
properties and with such an im-
pulsion it is employed." "Exhibit
ed internally, in an adequate dose,
Opium produces the following changes
in the vital functions. The pulsations
of the heart and Arteries are first
made swifter, fuller, and stronger,
and afterwards slower than at the
time of taking it. With the increase
of frequency in the pulse, the heat
of the body is generally somewhat
augmented. The respiration is little



affected, except a large dose has been
taken towards the conclusion of the
operation of which, it becomes slow
stertuous and laborious. The
natural functions are thus disturbed. The
appetite and digestion from unusually
large, or frequently repeated doses are gen-
erally impaired, and vomiting often in-
duced; the discharges from the intestines
are diminished or suppressed, secretion
and excretion are impaired in every
part of the body except the skin, the
discharge from which is evidently aug-
mented, sometimes preceded or attended
with a sense of pricking or stinging of
the skin terminating now and then in
a species of milinary eruption.

The animal functions are affected as
follows. The brilliancy of the mind is by
degrees augmented, and continues to



increase of the dose be considered
until the delirium of intoxication
is produced, which, as when resulting
from spirituous liquors is attended in
different constitutions with different
symptoms. It is, however, more generally
productive of a pleasant and jovial
state of the mind than the contrary,
and, in many, it increases the venereal
propensity. These effects continuing
for some time are succeeded by others
of a very opposite character - the mind
becomes gradually dull and languid
there is aversion to motion, obtuseness
as to impressions and inclination to
sleep - The Turks resort to
its use to inspire courage, to soothe
sorrow, or dissipate misfortune; to al-
leviate the demands of hunger during
their fasts, and to supply the place



of stimulating liquors common in countries where a different religion prevails.

Opium may be used with great advantage in Intermitteuts, if administered about an hour before the paroxysm, and even according according to Lind, in the hot stage, this practice may be injurious when the system is plethoric, and inflammatory but highly beneficial, under opposite circumstances -

Its use in continued fever and in pneumonia, should be preceded by suitable depleting measures; in the former it is sometimes useful in the advanced stage as a stimulant, in small doses at regular intervals, and in larger portions, when our object is to allay irritation; in the latter after general and local bleeding, and blistering,



when the cough is productive of pain
and sleeplessness, Opium may be em-
ployed with safety and advantage.

Sanson used Opium in mor-
tification of the lower extremities,
with manifest advantage, as soon
as pain ceased and sleep was pre-
cured, the line of separation became
evident.

Doctor Harrison found
great advantage, from the use of
one drachm of Opium dissolved
in an ounce of Nitric Acid, twenty
to forty drops produced salutary
effects, in consumption, when the
usual preparations were unavailing,
and the Nitric acid alone was
also without effect. In tetanus
the use of Opium, is our chief
resource, the amount demanded in
this disease, as well as in Mame, etc.



is often very large, in the latter disease it should be urged until sleep is the result a necessary indication to cure.

Since what has been urged, as to the use of Opium, in certain stages of almost all diseases, it would only necessary to name a few, to which I have just referred, in which its use was peculiarly appropriate.

It remains for me, to speak of the use of that peculiar proximate principle denominated Morphia, this substance and its usual saline preparations may be used in, possibly all cases as a substitute for Opium, with all the advantage derived from the use of that article: and its use is especially appropriate in all cases, when from idiosyncrasy, the common preparations of Opium, cannot



be safely employed. The preparations
of Morphia seem also to produce very
solitary effects in surgical disease
and in mania, partly in both diseases
to transcend the power of common Opium.
The illustration of this remark as well
the use of Morphia in a few other cases
will be gathered from the subsequent
remarks, principally made by Medical
friends to whom the Article has been
submitted.

One gentleman has
politely furnished me with notes of
three cases. The first a merchant labouring
under intermittent fever. He had long
accustomed himself to the use of
strong drink, and owing to the debilitating
course which his disease demanded,
he was strongly threatened with dis-
tressing tremors. In consequence of
this, and the other circumstances,



James C. Freeman in his constitution
under the influence of his early, indulgent, and
the most favorable and liberal habits to sleep
and the last moment of his life he felt right
hand rendered useless by some means or
disinfectant. Under these circumstances
I gave him one month of a course of Mr
Shinn's every day until he had them
for the of a year. He then he was con-
fused and enjoyed a wonderful night's
sleep all his symptoms became an hour
and I had no occasion to repeat
the dose. The second case was one
of the gentlest and most constitutionally
weakly, impaired by the great indulgence
both in drinks and meats, he had been
able to give of a slow run that it was
for two weeks before my seeing him; and
had indulged more or less, during that
whole period, in an occasional glass



of wine, and sometimes stimulating
foods. From an unconquerable apprehension
of falling into typhoid, he had slept very
little for several nights, and the symptoms
of shock, rather, were for several of the
last days of my attendance, very threat-
ening. I gave him at 8 o'clock on the
evening one fourth of a grain of Morphine
and repeated it at 10 o'clock. He rest-
ed much better that night than he had
in a number of nights, previously. I gave
him on the three subsequent evenings
one fourth of a grain at bed time as
well with good effect. His third
patient was an Irishman, long used to
strong drink and hard work, the also
laboured under a fever of an intermittent
type. As he was able to sleep without con-
dones of some sort I gave him half
a grain of Morphine which, not having



reduced sleep in two hours after was
restored. He slept well, and had no
necessity for its employment afterwards."

Another medical friend informs me
that he has derived more advantage from
of morphia in scirrhus than could be
expected from Opium under the same
circumstances. A medical student

whose case required some anodyne every
night, informed me that he had de-
rived the same advantage from the
use of Lemon juice, saturated with
morphia, in the small dose of three or
four drops than he formerly did from
thirty drops of Laudanum without the
disagreeable sensations experienced after
taking the latter. A gentleman

labouring under Mercurial with extensive
ulcerations in various parts as to require
frequent use of anodynes has got over



six months derived great advantage
from the use of Morphine having used
over two hundred grains the dose with
which he commenced is now used and
its good effects universally experienced.
the bowels in consequence of its use have
not required medicine. the other in-
fluences of Climate affected his health
and rendered him otherwise very uncom-
fortable -

A gentleman habituated to the free use of Stimulants of
Food and Drink several times in a
state threatening mania peris for which
contusion he had been treated before
I saw him was treated with Morphine,
until mental equilibrium resulted, in every
instance with speed and complete suc-
cess.

Professor Gibson used Mor-
phine in the important surgical cases
this winter and I believe he was

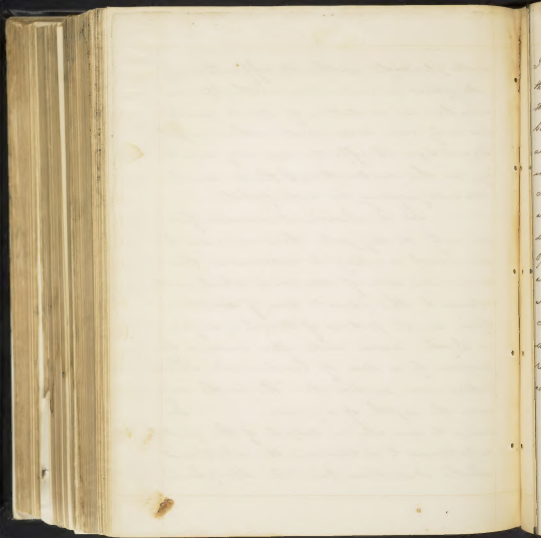


will pleased with its effects-

Morphia in combination with Ipecacuanha in imitations of Dover's powder has only once been used within my knowledge its effects were very salutary on this combination I think much advantage may be anticipated.

In conclusion it remains for me only to suggest that experiments are much wanting to determine the minimum dose of Morphia which will represent the usual dose of *Sinatura Opii*, small portions of Morphia so far as I can learn will often answer the purpose of a dose of Laudanum, I mean portions even smaller than the fourth or even the eighth of a grain.

It seems to me also a subject of the greatest importance to determine the relation which Narcotism bears to Morphia



I shall not be surprised to learn that its character widely differs from the descriptions drawn by M. Magendie being perhaps a comparatively harmless associate with Morphia resembling in some degree the relations of Cocaine and Prussic with their associates. This view if correct will not destroy the utility of the De Narcotised Opium this preparation is well known and highly commended. Arthur besides Narcotina removes a variety of substances from Opium more soluble in it than was that substance perhaps to their removal may be attributed its acknowledged superiority over the common Opium.

